

I. IN THE CLAIMS:

1. (Canceled)

2. (Cancelled)

3. (Previously Presented) The method of claim 14, wherein the hydroxylamine derivative is present in a total amount from about 1% to about 20% by weight of the composition.

4. (Previously Presented) The method of claim 14, wherein the corrosion inhibitor comprises benzotriazole.

5. (Previously Presented) The method of claim 4, wherein the corrosion inhibitor consists essentially of benzotriazole.

6. (Previously Presented) The method of claim 5, wherein the corrosion inhibitor is present in a total amount from about 0.01% to about 0.05% by weight of the composition.

7. (Previously Presented) The method of claim 14, wherein the water is present in a total amount from about 90% to about 99% by weight of the composition.

8. (Previously Presented) The method of claim 14, wherein the composition comprises a sufficient amount of the acid and/or a base to adjust the pH of the composition to a desired level between pH 2 and pH 12.

9. (Previously Presented) The method of claim 8, wherein the acid and/or base are present in a total amount from about 0.01% to about 2% by weight of the composition.

10. (Currently Amended) The method of claim 14, wherein the composition further comprises one or more of the following: ~~a two-carbon atom linkage alkanolamine compound, a~~

quaternary ammonium salt, a chelating agent, an organic solvent, a non-hydroxyl-containing amine compound, a surfactant, an additional oxidizing agent, and a non-abrasive additive.

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Currently Amended) A method for chemical mechanical polishing of a substrate comprising:

providing a substantially abrasive-free chemical mechanical polishing composition containing less than 1.0 % by weight abrasive, that comprises a hydroxylamine derivative, a corrosion inhibitor, water, and optionally a sufficient amount of an acid and/or a base to adjust the pH of the composition to a desired level, wherein the majority of the composition comprises water;

contacting the chemical mechanical polishing composition with a substrate having a metal oxide layer surface, upon which metal oxide surface a barrier layer is disposed, upon which barrier layer a metal layer is disposed, and

chemically mechanically polishing the substrate by contacting the substrate surface with an abrasive polishing pad at an applied pressure of not more than about 2 psi and by moving the pad in relation to the substrate,

wherein:

the removal rate of the barrier layer is greater than about 500 Å/min,

~~wherein~~ the removal rate of the metal oxide layer is less than about 10 Å/min, ~~wherein~~ the removal rate of the metal layer is less than about 250 Å/min, [[and]]

~~wherein~~ the hydroxylamine derivative is substantially free of hydroxylamine, and the composition further comprises a two-carbon atom linkage alkanolamine compound.

15. (Cancelled)

16. (Previously Presented) The method of claim 14, wherein the removal rate of the metal layer during the chemical mechanical polishing step is greater than about 10 Å/min.

17. (Previously Presented) The method of claim 14, wherein the removal rate of the barrier layer during the chemical mechanical polishing step is less than about 750 Å/min.

18. (Currently Amended) The method of claim 14, wherein the abrasive-free chemical mechanical polishing composition is substantially free of one or more of the following: acid and/or base to adjust pH, ~~two carbon atom linkage alkanolamine compounds~~, quaternary ammonium salts, chelating agents, organic solvents, non-hydroxyl-containing amine compounds, surfactants, additional oxidizing agents, and non-abrasive additives.

19. (Currently Amended) The method of claim 14, wherein the abrasive-free chemical mechanical polishing composition consists essentially of:

about 1% to about 5% by weight of a hydroxylamine derivative selected from the group consisting of hydroxylamine nitrate, hydroxylamine sulfate, and mixtures thereof;

about 0.01% to about 0.05% by weight of benzotriazole;

about 90% to 99% by weight of water; and

less than about 2% by weight of the acid and/or a base to adjust the pH of the composition to a desired level, and

a two carbon atom linkage alkanolamine compound.

20. (Canceled)

21. (Previously Presented) The method of claim 14, wherein the metal layer of the substrate comprises copper.

22. (Previously Presented) The method of claim 21, wherein the barrier layer of the substrate comprises tantalum nitride.

23. (Previously Presented) The method of claim 14, wherein the barrier layer of the substrate comprises tantalum nitride.

24. (Currently Amended) The method of claim 14, wherein the pH of the composition is ~~about~~ between about 4 and about 10.

25. (Currently Amended) The method of claim 14, wherein the pH of the composition is ~~about~~ between about 5.2 and about 5.5.

26. (Previously Presented) The method of claim 14, wherein the hydroxylamine derivative is present in a total amount from about 0.2% to about 20% by weight of the composition and wherein the concentration of the acid and/or a base to adjust the pH of the composition is from about 0.01 to about 1%.

27. (Currently Amended) A method for chemical mechanical polishing of a substrate comprising:

providing a substantially abrasive-free chemical mechanical polishing composition containing less than 1.0 % by weight abrasive, that comprises a hydroxylamine derivative, a corrosion inhibitor, water, and optionally a sufficient amount of an acid and/or a base to adjust the pH of the composition to a desired level, wherein the majority of the composition comprises water;

contacting the chemical mechanical polishing composition with a substrate having a metal oxide layer surface, upon which metal oxide surface a barrier layer is disposed, upon which barrier layer a metal layer is disposed, and

chemically mechanically polishing the substrate by contacting the substrate surface with an abrasive polishing pad at an applied pressure of not more than about 2 psi and by moving the pad in relation to the substrate,

wherein:

the removal rate of the barrier layer is between 200 and 580 Å/min, and

~~wherein~~ the removal rate of the metal oxide layer is less than about 10 Å/min, ~~wherein~~

the removal rate of the metal layer is less than about 250 Å/min; and

~~wherein~~ the hydroxylamine derivative is substantially free of hydroxylamine; and the composition further comprises a two-carbon atom linkage alkanolamine compound.

28. (Previously Presented) The method of claim 14 wherein the hydroxylamine derivative comprises hydroxylamine nitrate.

29. (Previously Presented) The method of claim 14 wherein the hydroxylamine derivative comprises hydroxylamine sulfate.

30. (Currently Amended) [[A]] The method of claim 14 wherein the hydroxylamine derivative comprises hydroxylamine sulfate and hydroxylamine nitrate.

31. (Previously Presented) The method of claim 27 wherein the hydroxylamine derivative comprises hydroxylamine nitrate.

32. (Previously Presented) The method of claim 27 wherein the hydroxylamine derivative comprises hydroxylamine sulfate.

33. (Currently Amended) [[A]] The method of claim 27 wherein the hydroxylamine derivative comprises hydroxylamine sulfate and hydroxylamine nitrate.